

LIST OF CURRENT CLAIMS

Claim 1 (Currently Amended). A positioning apparatus, wherein

a plug member (12) inserted into a positioning hole (5) formed in a second block (2) is projected from a first block (1),

a plurality of slide portions (61, 61) opposed to each other in a second radial direction across the plug member (12) are arranged around the plug member (12) movably in a first radial direction (D1) substantially orthogonal to the opposed second radial direction of the slide portions (61, 61),

an annular pressing member (15) which is allowed to diametrically expand and diametrically contract is arranged around an outer periphery of the slide portions (61, 61), and

a drive arrangement ~~means (D)~~ drives the slide portions (61, 61) to diametrically expand the pressing member (15) in [[a]] the second radial direction (D2) ~~which is the opposed direction and~~ to press the pressing member (15) against a peripheral surface of the positioning hole (5), ~~whereby~~ wherein the slide portions (61, 61) are moved in the first radial direction (D1) with respect to the plug member (12).

Claim 2 (Currently Amended). The positioning apparatus as set forth in claim 1, wherein

inclined outer surfaces (13, 13) which get closer to an axis of the plug member (12) toward a leading end are formed on an outer surfaces of the slide portions (61, 61),

an inclined inner surface (17) which is allowed to make a tapering engagement with the inclined outer surfaces (13, 13) is formed on the pressing member (15),

a drive member (21) is inserted into the plug member (12) axially movably, and the drive member (21) is connected to the pressing member (15),

the drive member (21) moves the pressing member (15) toward a base end for locking to expand the pressing member (15) in the second radial direction (D2) by the tapering engagement of the inclined inner and outer surfaces to ~~and~~ bring the pressing member (15) into close contact with the inner peripheral surface of the positioning hole-(5), and

the drive member (21) also moves the pressing member (15) toward the leading end for releasing to cancel the expanded condition of the pressing member (15) and cancel the closely contacted condition of the pressing member-(15).

Claim 3 (Currently Amended). The positioning apparatus as set forth in claim 1, wherein

inclined outer surfaces (64, 64) which get closer to an axis of the plug member (12) toward a leading end and oppose each other in the second radial direction (D2) are formed on the plug member-(12),

the slide portions (61, 61) are allowed to make a tapering engagement with the inclined outer surfaces (64, 64) from the leading end side,

a drive member (21) is inserted into the plug member (12) axially movably, and the drive member (21) is connected to the slide portions-(61, 61),

the drive member (21) moves the slide portions (61, 61) toward a base end for locking to diametrically expand the pressing member (15) in the second radial direction (D2) by the tapering engagement of the slide portions and the inclined outer surfaces to ~~and~~ bring the pressing member (15) into close contact with the inner peripheral surface of the positioning hole-(5), and

the drive member (21) also moves the slide portions (61, 61) toward the leading end for releasing to cancel the expanded condition of the pressing member (15)-and cancel the closely contacted condition of the pressing member-(15).

Claim 4 (Currently Amended). The positioning apparatus as set forth in claim 1, wherein

the pressing member ~~(15)~~ is formed into an annular shape.

Claim 5 (Currently Amended). The positioning apparatus as set forth in claim 4, wherein

gaps ~~(A, A)~~ are formed between the pressing member ~~(15)~~ and the plug member ~~(12)~~ in the first radial direction ~~(D1)~~.

Claim 6 (Currently Amended). The positioning apparatus as set forth in claim 4, wherein

a slit ~~(51)~~ is formed in the pressing member ~~(15)~~ to allow the pressing member ~~(15)~~ to deform in a diametrically expanding direction and a diametrically contracting direction.

Claim 7 (Currently Amended). The positioning apparatus as set forth in claim 4, wherein

the pressing member ~~(15)~~ is formed in an annularly seamless manner.

Claim 8 (Currently Amended). The positioning apparatus as set forth in claim 7, wherein

two contact portions ~~(61a, 61a)~~ allowed to come into contact with an inner surface of the pressing member ~~(15)~~ and an escape portion ~~(61b)~~ arranged between the two contact portions ~~(61a, 61a)~~ are formed on an outer surface of each of the slide portions ~~(61, 61)~~ circumferentially side by side, and

a gap ~~(B)~~ is formed between the escape portion ~~(64b)~~ and the pressing member ~~(15)~~.

Claim 9 (Currently Amended). A positioning apparatus, wherein

a plug member ~~(12)~~ inserted into a positioning hole ~~(5)~~ formed in a second block ~~(2)~~ is projected from a first block ~~(1)~~,

a plurality of slide portions ~~(61, 61)~~ opposed to each other in a second radial direction across the plug member ~~(12)~~ are arranged around the plug member ~~(12)~~ movably in a first radial direction ~~(D1)~~ substantially orthogonal to the opposed second radial direction of the slide portions ~~(61, 61)~~ and are allowed to diametrically expand and diametrically contract in ~~[[a]]~~ the second radial direction ~~(D2)~~ which is the opposed direction, and

a drive arrangement ~~means ~~(D)~~~~ drives the slide portions ~~(61, 61)~~ to diametrically expand in the second radial direction ~~(D2)~~ and to press against a peripheral surface of the positioning hole ~~(5)~~, ~~whereby~~ wherein the slide portions ~~(61, 61)~~ are moved in the first radial direction ~~(D1)~~ with respect to the plug member ~~(12)~~.

Claim 10 (Currently Amended). The positioning apparatus as set forth in claim 9, wherein

inclined outer surfaces ~~(64, 64)~~ which get closer to an axis of the plug member ~~(12)~~ toward a leading end and oppose each other in the second radial direction ~~(D2)~~ are formed on the plug member ~~(12)~~,

a cylindrical connecting member ~~(81)~~ is arranged around an outer periphery of the plug member ~~(12)~~,

the slide portions ~~(61, 61)~~ are supported on the connecting member ~~(81)~~ movably in the second radial direction ~~(D2)~~, and are allowed to make a tapering engagement with the inclined outer surfaces ~~(64, 64)~~ from the leading end side,

a drive member ~~(21)~~ is inserted into the plug member ~~(12)~~ axially movably, and the drive member ~~(21)~~ is connected to the connecting member ~~(81)~~,

the drive member ~~(21)~~ moves the slide portions ~~(61, 61)~~ toward a base end for locking to expand the slide portions ~~(61, 61)~~ in the second radial direction ~~(D2)~~ by the tapering engagement of the slide portions and the inclined outer surfaces to ~~and~~ bring the slide portions ~~(61, 61)~~ into close contact with an inner peripheral surface of the positioning hole ~~(5)~~, and

the drive member ~~(21)~~ also moves the slide portions ~~(61, 61)~~ toward the leading end for releasing to cancel the expanded condition of the slide portions ~~(61, 61)~~ and cancel the closely contacted condition of the slide portions ~~(61, 61)~~.

Claim 11 (Currently Amended). The positioning apparatus as set forth in claim 10, wherein

an urging member ~~(84)~~ is provided, which applies resilient force against the slide portions ~~(61, 61)~~ in a diametrically contracting direction.

Claim 12 (Currently Amended). The positioning apparatus as set forth in claim 9, wherein

two contact portions ~~(61a, 61a)~~ and an escape portion ~~(61b)~~ arranged between the two contact portions ~~(61a, 61a)~~ are formed on an outer surface of each of the slide portions ~~(61, 61)~~ circumferentially side by side, and

when the contact portions ~~(61a, 61a)~~ come into contact with an inner peripheral surface of the positioning hole ~~(5)~~, a gap ~~(B)~~ is formed between the escape portion ~~(61b)~~ and the inner peripheral surface of the positioning hole ~~(5)~~.

Claim 13 (Currently Amended). A clamping system, wherein

the positioning apparatus as set forth in claim 1 or claim 9 is provided to releasably clamp the second block to the first block.

Claim 14 (Previously Presented). A clamping system, wherein

a plurality of positioning apparatuses are provided and at least one of them is the positioning apparatus as set forth in claim 1 or claim 9.